

# #hy-range II

BY **hy-gain**

23-CHANNEL  
SOLID STATE 5-WATT MOBILE  
CITIZENS TWO-WAY RADIO



**MODEL 671B-PR**

OWNER'S MANUAL

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## Specifications

### *General*

Channels .....	all 23 in the citizens band (27 MHz)
Antenna impedance .....	50 ohms, nominal
Dimensions (HWD) .....	2¼" x 6¾" x 9½"
Shipping weight .....	4 lbs. 11 oz.
Power requirement .....	11.5 VDC - 14.5 VDC, negative or positive ground

### *Receiver*

Sensitivity .....	0.7 µV for 10 dB (S + N) N ratio
Audio output .....	3 watts, maximum
Current drain .....	about 100mA (no signal)

### *Transmitter*

RF power output .....	4 watts
Modulation .....	AM, type 8A3
Current drain .....	less than 1 amp @ 13.8 VDC
Compliance .....	Type Accepted, under FCC Rules, Part 95

## General Description

The Hy-Gain, Hy-Range II is a full 23-channel transceiver designed and type accepted for Class D Citizens Band operation as designated by the Federal Communications Commission (FCC). See the section on FCC Regulations for further information.

It is a completely solid-state, compact unit with high reliability and low power consumption. The system of frequency synthesization provides immediate operation on all 23 channels without additional crystals or adjustments. It features a delta tune control, which helps pick up stations that are slightly off-frequency. A switchable automatic noise limiter (ANL) is included to help reduce atmospheric noise. The unit can be used for public address with the addition of a PA speaker.

The Hy-Range II transceiver operates from 12 volts DC (nominal), either negative or positive ground. For best results from your transceiver, please read all the instructions before beginning your installation.



## You and the FCC

### **Licensing Your Citizens Two-Way Radio**

Before doing anything else, fill out FCC Form 505 (enclosed) and send it off in order to receive your Class D License as soon as possible. Mail the upper portion, along with \$4.00 to:

Federal Communications Commission  
Gettysburg, Pennsylvania 17325

Mail the lower portion, along with \$5.35 to:

Superintendent of Documents  
Government Printing Office  
Washington, D.C. 20402

You should receive your Class D station license and a copy of Volume VI of the FCC Rules and Regulations, which includes Part 95, within 60 days.

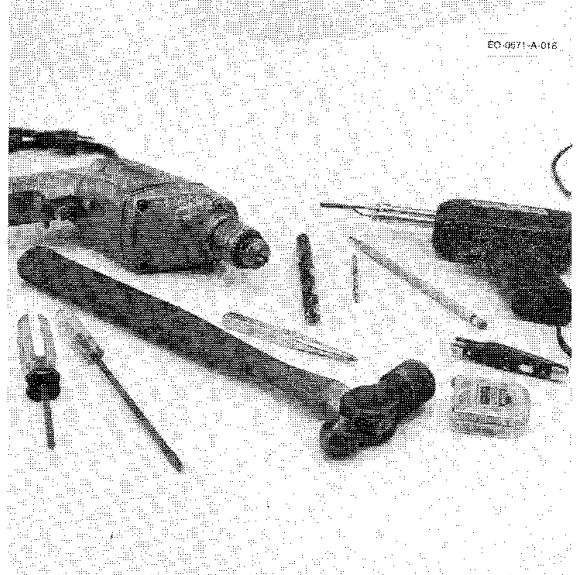
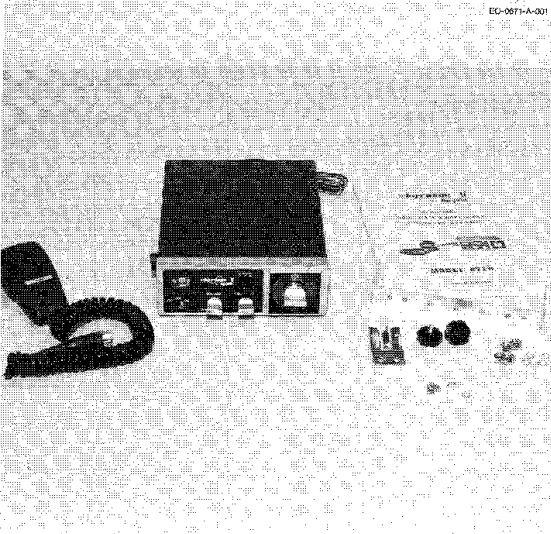
It is illegal to transmit without a station license, and the FCC requires you to keep a copy of Part 95.

### **Legal Requirements**

It is your responsibility to see that your unit is always operated in accordance with FCC Rules and Regulations. Don't tamper with any internal adjustments; these adjustments can be done only by someone with a first- or second-class radiotelephone license. Especially, be sure that only factory-authorized crystals, transistors, and other components are used in this radio.

If your unit should need servicing, contact the nearest authorized Hy-Gain Warranty Service Station. There is a list of these centers included with the radio.

## Installation



Choose a convenient location that is protected from moisture and heat, and be sure that the unit will not interfere with your driving. Decide in advance the best way to route the antenna coax.

### Tools required for installation:

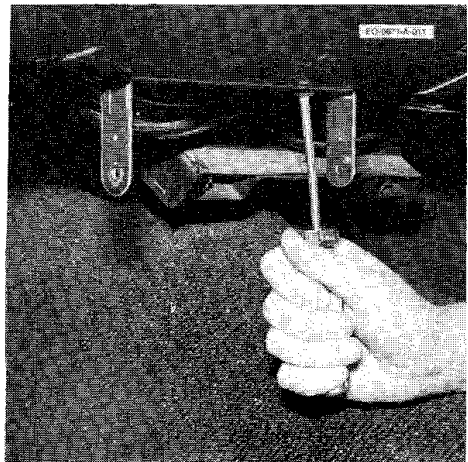
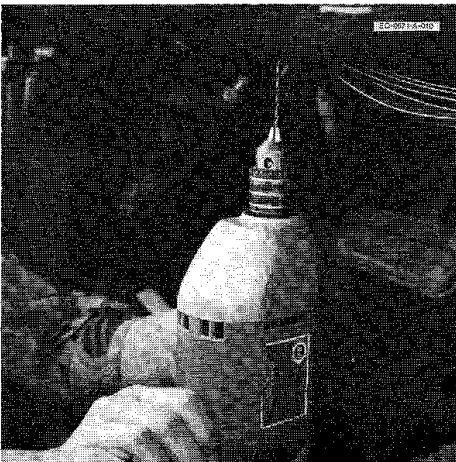
pencil	center punch
drill	pocket knife (optional)
drill bits (5/32" & 1/8")	electricians tape
tape measure	low heat soldering gun
phillips screwdriver	rosin core solder (not acid core)
hammer	

### Mounting Bracket

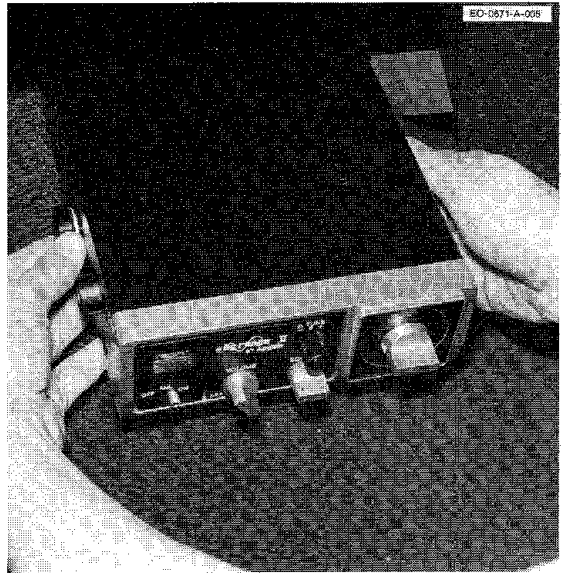
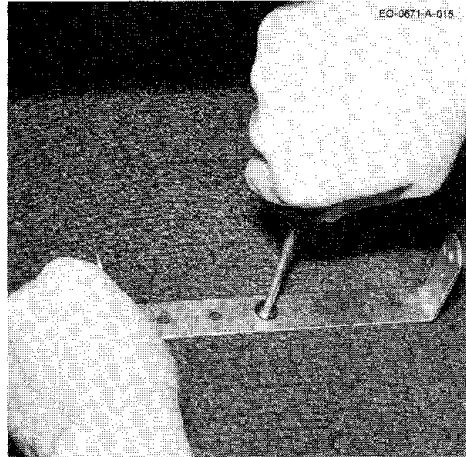
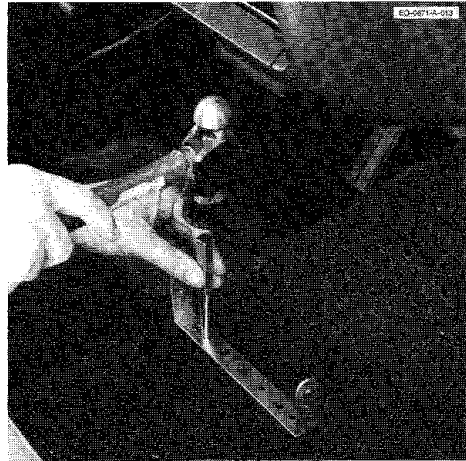
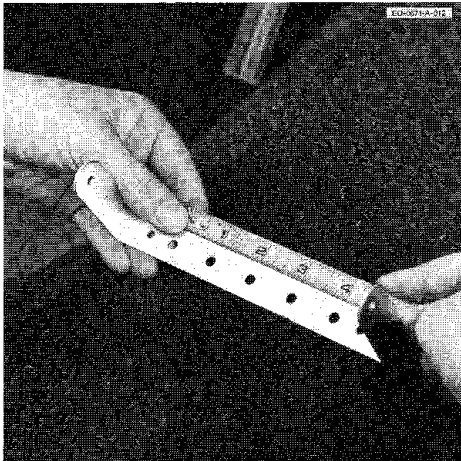
Use the bracket as a template to mark where the mounting holes will be drilled. Measure carefully to be certain the installation will be straight.

With a center punch, indent the marked areas. This will prevent the drill bit from skipping when the hole is drilled.

### Dash Mounted



Floor Mounted



Attach the bracket with at least three screws for a sturdy installation. Use the large thumb screws to fasten the transceiver to the bracket.

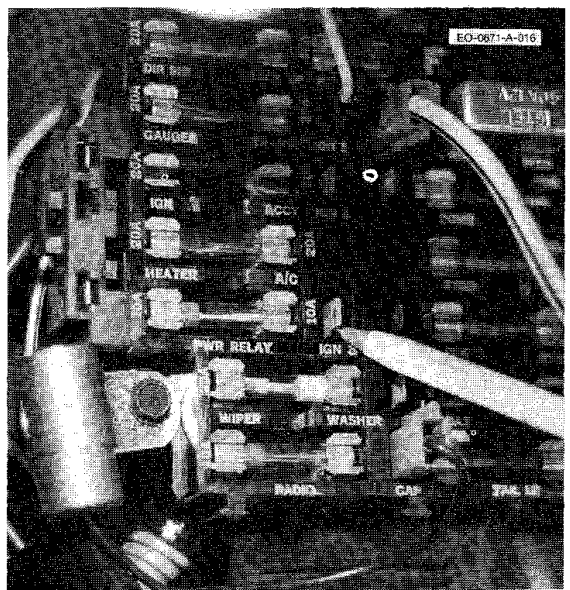
## Power Connections

The Hy-Range II may be operated from any 12 volt DC battery system, either negative or positive ground. Connect the red lead to a "+" (positive) area of the electrical system, and the black lead to a "-" (negative) area of the electrical system.

Some common connections areas for the red lead are the accessory terminal on the ignition switch, or the accessory side of the fuse block.

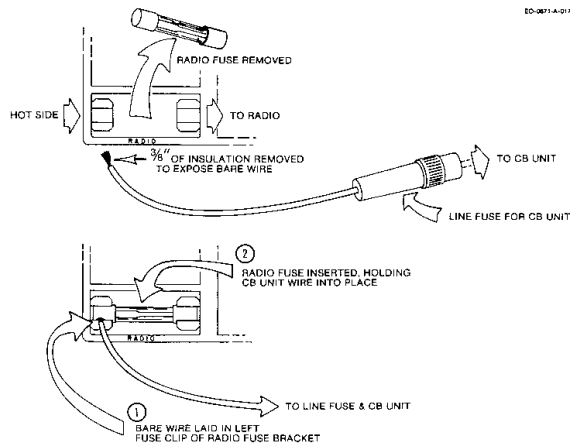
The black ground lead should be connected to the metal firewall or any other small screw that is connected to the vehicle chassis. For a more secure connection, use solder or electricians tape wherever necessary.

Coil any excess power lead and secure it in a place where it will be up out of the way of your feet.



### Don't Let Theft Happen to You

Each month thousands of CB radios are stolen out of vehicles. These radios don't have to be gone forever. Before you install your transceiver, engrave some sort of identification number directly onto the metal outer case. You can use the serial number that is located on the plate on the back of the transceiver, or your social security number. The important thing is to keep a record of whichever number you use. If your CB radio should be stolen, the identification number can be traced back to you. This in itself often discourages would-be thieves.



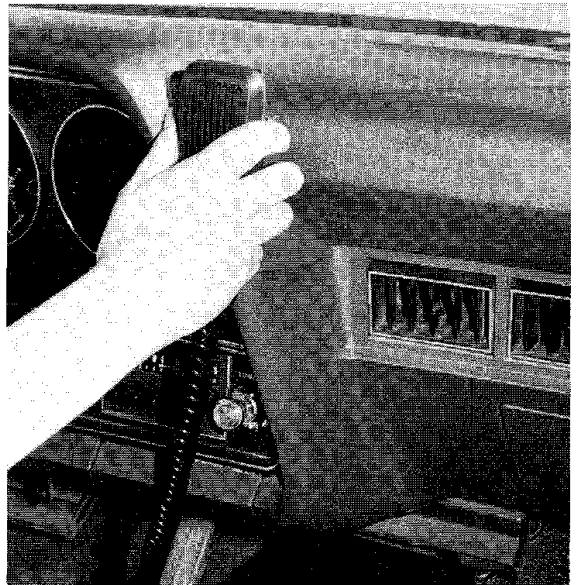
## Antenna

Any of the following Hy-Gain antennas are suitable for use with the Hy-Range II transceiver. Mounting instructions and hardware are furnished with each antenna.

Antenna	Order No.	Height	Coax Supplied	Features
Hellcat 1	557	54"	yes	mini-spring, roof top mount
Hellcat 2	556	24"	yes	shorty, roof top mount
Hellcat 3	558	35"	yes	magnetic mount
Hellcat 4	559	54"	yes	trunk mount
Hellcat 5	575	54"	yes	no spring, roof top
Hellcat 6	561	54"	yes	camper-type w/foldover adapter
Hellcat 7	576	54"	yes	foldover adapter, roof top mount
Hellcat 10	506	54"	yes	powercat, mini-spring roof top mount
Mother Trucker II	515	6'3"	yes	mirror mount
Mother Trucker II	427	6'3"	yes	mirror mount pair
Gypsy 1	546-PR	47"	yes	mirror mount, fiberglass
Gypsy 2	545-PR	47"	yes	mirror mount, pair, fiberglass
Gypsy 3	430A-PR	47"	no	3/8"-24 stud mount
102' whip	413	102"	no	1/4-wave, 3/8"-24 stud mount
Ten Pounder	425	80"	no	3/8"-24 stud mount
Power Cat	509	57"	yes	mini-spring, roof mount
Power Cat	510	57"	yes	trunk mount

### Microphone Mounting Bracket

Install the mic-hanger bracket in an area which will allow the microphone and its cord to hang in a convenient position out of the way of your feet. For example, mount the bracket high on the dash where it is within easy reach.



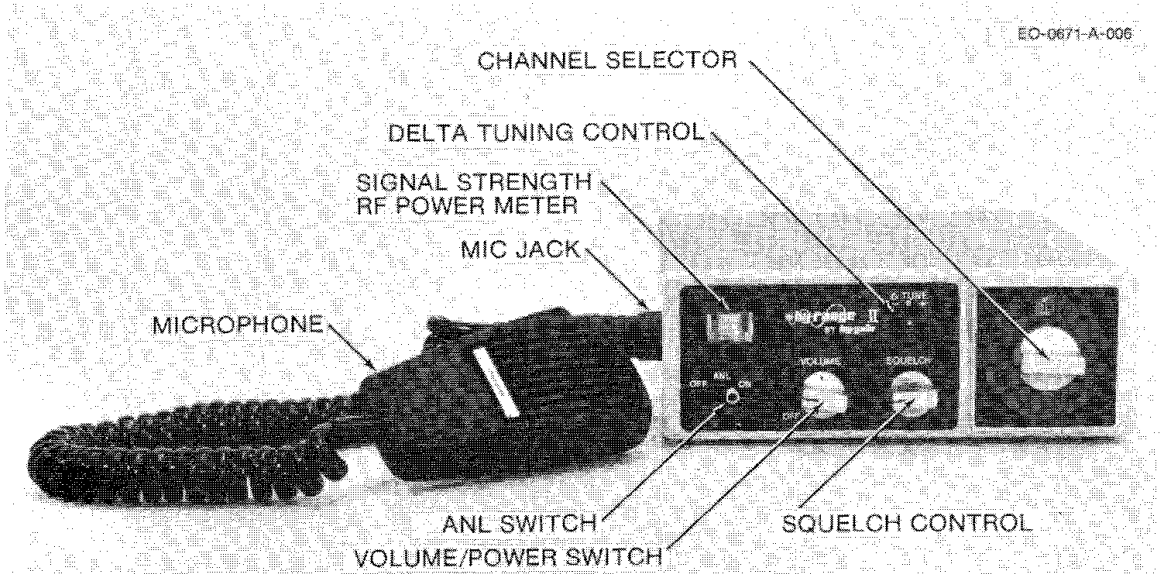
### External Speaker

Two optional speakers, the Hy-Gain 612 and 613, can be used with the external speaker jack. Instructions on how to mount are included with them.

Any 8-ohm, 4-watt speaker could be used as well. Plug the speaker cable plug into the external speaker jack (3.5 mm plug required).

### Optional Handset

Telephone Handset, model 676, is available for use with the Hy-Range radios. See the manual supplied with it for instructions on its use.



Turn page for definitions.

## **Front Panel Controls and Connections**

### **Signal Strength/RF Power Meter**

During reception, the built-in meter provides a relative indication of signal strength in "S" units (lower scale). This provides a comparison between one incoming signal and another.

During transmit, the meter provides an indication of your antenna rf power (upper scale). As you speak, the pointer should flicker slightly, indicating that you are modulating the rf carrier.

### **Microphone Jack**

A power outlet for the microphone or the optional telephone handset.

### **Power Switch/Volume Control**

This knob turns the power on and off and controls the volume.

### **Squelch Control**

The squelch eliminates background noise. Turn the knob counterclockwise until a background noise is heard, then rotate the knob slowly clockwise until the background noise just disappears. The receiver will be relatively quiet under no signal conditions, but an incoming signal will overcome the squelch action and be heard. As the control is turned clockwise, the squelch action is progressively increased and stronger signals are needed to overcome it. To receive extremely weak signals or to disable the squelch circuit, turn the control fully counterclockwise.

### **Channel Selector**

Rotate the switch to any one of the 23 channels, PA position.

## **Rear Panel Connections**

### **Power Cord**

See "Installation" Section

### **Fuse**

Uses a 2-amp, 3AG fuse.

### **External Speaker Jack**

The 3.5 mm jack accommodates any 8-ohm, 4-watt speaker.

### **Remote Speaker Jack**

This jack is used with the optional Telephone Handset, Model 676.

### **Delta Tuning ( $\Delta$ Tune) Control**

Used to fine tune stations that are slightly off-frequency. Set it on the position that provides best reception.

### **ANL (Automatic Noise Limiter) Switch**

When placed in the ON position, this switch reduces undesirable atmospheric-type noises.



1. Select a channel and listen carefully to be sure it is not busy.
2. Press the push-to-talk (PTT) button on the microphone and hold it down. Hold the microphone four to six inches from your mouth and speak at a normal level. Announce the call letters of the station you are calling, followed by your call letters. Repeat if necessary. To receive a reply, sign off and repeat the call letters of your station.

### **PA (Public Address)**

1. Connect an external PA speaker to the PA jack on the rear panel.
2. Set the CB channel selector in the "PA" position.
3. Press the push-to-talk button on the microphone and talk into the mic. Your voice will be heard from your external speaker.

**NOTE:** The volume control on the transceiver does not control the speaker output during PA speaker.

## **Noise Suppression**

### **Tune-up**

Before beginning any special noise suppression steps, be sure that the vehicle is well-tuned. Clean and tighten all connections, including alternator, battery, regulator, and coil connections. Perform the following maintenance steps as necessary: Solder any crimped spark plug or distributor leads; if you must use solid-wire leads, clean and regap or replace spark plugs and ignition points; and check and clean alternator rings or generator brushes. Retune the engine at the manufacturer's recommended intervals.

### **Corrective Steps**

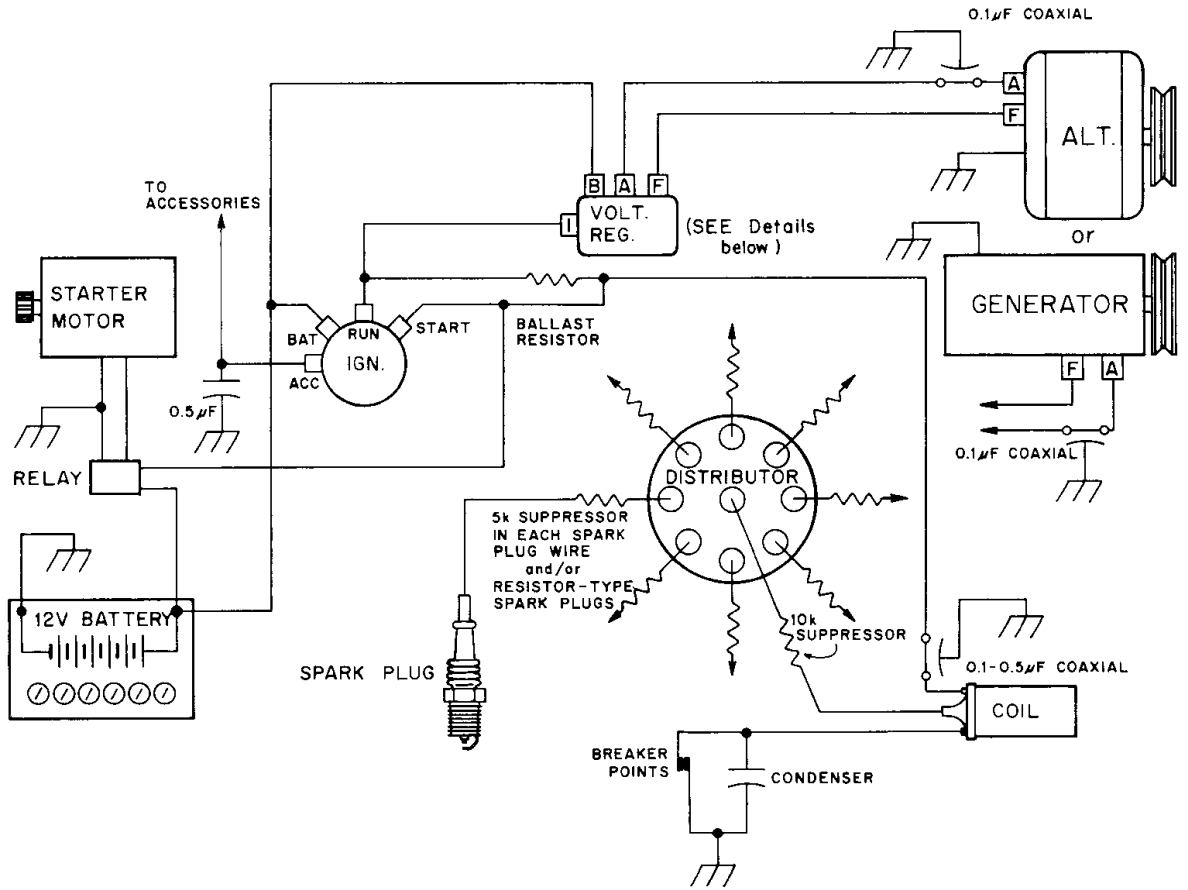
In order to find and eliminate the maximum number of noise sources that are present in any vehicle, start the strong sources, then work back. To be sure the noise comes from your vehicle and not outside it, drive to a location that is free of man-made electrical interference (such as noisy power lines, industrial noise, or other vehicles). Test for noise with a weak signal on the channel and the engine off. Then start the engine. Ignition noise will probably be present at all engine speeds. If it is severe, it will make a normally readable signal unreadable.

To reduce ignition noise, install resistor-type spark plugs. If non-resistance ignition wiring is used, install a 10 k-ohm suppressor resistor at each spark plug tower of the distributor. Install a coaxial capacitor as close as possible to the ignition coil primary.

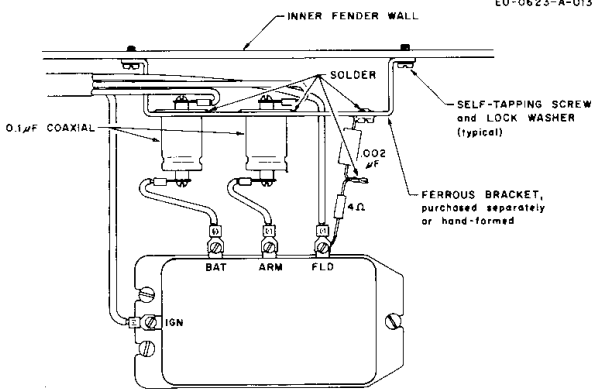
A "whining" noise which varies with engine speed and continues with the ignition turned off and the vehicle coasting in gear characterizes the alternator. Check and clean it and install an alternator filter.

An irregular, clicking sound which disappears at a slow idle may be the voltage regulator. Install a 4-ohm carbon resistor as close to the field terminal of the regulator as possible, then a .002 uF capacitor in series with and as close to the resistor as possible. Connect the capacitor to ground. See the detail drawings on next page.

Irregular popping noises which vary with road surfaces indicate static discharge at any of several locations in the vehicle. Tighten loose nuts and bolts and bond large areas such as the fenders, exhaust pipe, firewall, etc. to the frame with lengths of heavy wire braid. Contact a local electronics parts or automotive electrical service company to purchase the necessary items. Additional information is available in the **Radio Amateur's Handbook** published by the ARRL.

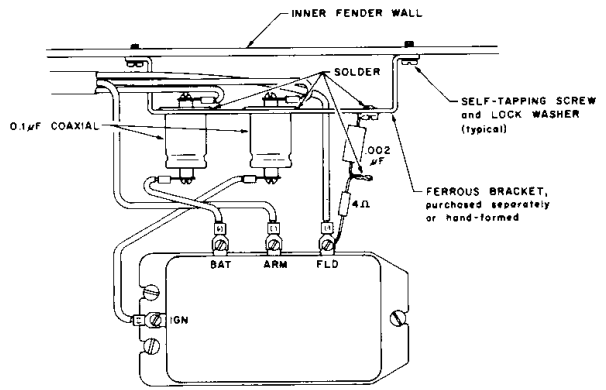


EO-0623-A-013



- FOR CARS EQUIPPED WITH -  
GENERATOR

EO-0623-A-012



- FOR CARS EQUIPPED WITH -  
ALTERNATOR

## SERVICE INFORMATION

### Warranty Repair

Please contact an authorized Hy-Gain Warranty Service Center before shipping your transceiver for repair. All equipment returned for warranty repair must be accompanied by your sales slip or invoice, or a copy of either. Units that have been modified cannot be accepted for repair.

### How To Ship Returns

Include all information requested by the Service Center, then pack the unit as follows:

Check the unit to see that all parts and screws are in place, then wrap it in heavy paper or put it in a plastic bag. If the original carton is not available, place the unit in a strong carton that is at least six inches bigger in all three dimensions than the unit. Fill the carton equally around the unit with resilient packing material (shredded paper, excelsior, etc.). Seal it with gummed paper tape, tie it with a strong cord, and ship it by prepaid express, United Parcel Service, or insured parcel post to Hy-Gain Warranty Service Center.

It is essential that the shipment be **well-packed** and **fully insured**. Damage claims must be settled between you and the carrier, which can delay repair and return of the unit to you.

### Purchase of Parts

Parts can be purchased from the Field Warranty Service Stations. All parts orders must be prepaid or COD. When ordering, please supply the following information:

1. model number of the unit
2. serial number of the unit
3. description of the part
4. part number (if available)

Address your letter to the nearest authorized Field Warranty Service Station in the enclosed booklet.

## 90-DAY LIMITED WARRANTY

Hy-Gain de Puerto Rico (HPR) warrants all products manufactured by it and bearing HPR model numbers to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit which under normal installation, use and service, discloses such defect within the ninety-day term of this warranty, dated from the date of purchase by the original owner. This warranty applies only to the original purchaser.

This warranty does not extend to any of our products which have been subjected to mis-use, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us. Nor does it extend to units which have been repaired or altered outside of our factory, nor to accessories used therewith not of our own manufacture.

Upon receipt of equipment, the purchaser is responsible for checking the contents for damage. Any shipping damage should be referred to the carrier.

HPR reserves the right to make any changes deemed necessary or desirable without advance notice or incurring any obligation to make like changes in units previously manufactured or sold.

This warranty does not cover transportation costs that may be incurred. HPR's sole liability is the remedy of any defect for the ninety-day period of this warranty. HPR is not responsible for personal injury or property damage resulting from improper or careless installation, or usage not intended by the manufacturer.

No person is authorized to assume for us any other liability in connection with the sale of our products.

All warranties are void and terminated one year after the last unit of its type and design has been manufactured by us.

All claims of defect or shortage should be addressed to the attached authorized Field Warranty Service Station list.

You must furnish model number, date, place, and proof of purchase, such as a copy of the sales receipt to establish warranty. Your letter should include all pertinent details along with part or item numbers involved. Do not return anything until requested to do so. No warranty card is furnished; you must supply the above information.

Any returned items must have prior authorization. Unexpected returns are greatly delayed in handling. These delays can be avoided by writing in advance and furnishing the necessary information.



